SAF-RC-232
100-IU-2 & 100-IU-6 Remaining Waste Sites – Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Kathy Wendt	H4-21	KW 5/4/15 INITIAL/DATE

COMMENTS:

SDG JP0934 **SAF-RC-232**

Sample Location: **100-B-35:1**

Date: 27 April 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Remaining Waste Sites – Soil Full Protocol - Waste Subsite 100-B-35:1
Subject: Diesel Range Organic - Data Package No. JP0934-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0934 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V4X9	3/30/15	Soil	C	See note 1
J1V501	3/30/15	Soil	C	See note 1
J1V502	3/30/15	Soil	C	See note 1
J1V503	3/30/15	Soil	C	See note 1
J1V504	3/30/15	Soil	C	See note 1
J1V505	3/30/15	Soil	C	See note 1
J1V506	3/30/15	Soil	C	See note 1
J1V507	3/30/15	Soil	C	See note 1
J1V508	3/30/15	Soil	C	See note 1
J1V509	3/30/15	Soil	C	See note 1
J1V510	3/30/15	Soil	C	See note 1

1 – Diesel range organics by 8015B.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blank was submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in

duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. JP0934 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DIESEL RANGE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0934	REVIEWER: ELR	Project: 100-B-35:1	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V4X9**

Lab Sample ID: 280-67225-1
Client Matrix: Solid % Moisture: 7.5

Date Sampled: 03/30/2015 0950
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04030008.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	04/03/2015 1204			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		11000		1100	4300
C10-C28		6300		730	4300

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	69		49 - 115

4/16/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V500**

Lab Sample ID: 280-67225-2
Client Matrix: Solid

% Moisture: 4.2

Date Sampled: 03/30/2015 0956
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04030011.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	04/03/2015 1319			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		5100		1000	4200
C10-C28		4100	J	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	70		49 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V501

Lab Sample ID: 280-67225-3
Client Matrix: Solid

% Moisture: 5.4

Date Sampled: 03/30/2015 1000
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04030012.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	04/03/2015 1346			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		3700	J	1100	4200
C10-C28		2900	J	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	69		49 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V502**

Lab Sample ID: 280-67225-4
Client Matrix: Solid % Moisture: 9.8

Date Sampled: 03/30/2015 0902
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04030013.D
Dilution:	1.0			Initial Weight/Volume:	30.5 g
Analysis Date:	04/03/2015 1410			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		12000		1100	4400
C10-C28		11000		740	4400

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	75		49 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V503**

Lab Sample ID: 280-67225-5
Client Matrix: Solid % Moisture: 7.0

Date Sampled: 03/30/2015 0933
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04030014.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	04/03/2015 1434			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		6600		1100	4300
C10-C28		*5100*		*730*	*4300*

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	73		49 - 115

4/16/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V504**

Lab Sample ID: 280-67225-6
Client Matrix: Solid

% Moisture: 4.8

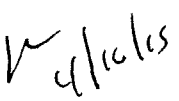
Date Sampled: 03/30/2015 0927
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271310	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04060007.D
Dilution:	1.0			Initial Weight/Volume:	30.7 g
Analysis Date:	04/06/2015 1427			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		4100		1000	4100
C10-C28		2800	J	700	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	74		49 - 115



Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V505**

Lab Sample ID: 280-67225-7
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 03/30/2015 0858
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271310	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04060008.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	04/06/2015 1451			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		13000		1100	4300
C10-C28		*11000*		*720*	*4300*

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	74		49 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V506***

Lab Sample ID: 280-67225-8
Client Matrix: Solid

% Moisture: 3.9

Date Sampled: 03/30/2015 0849
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271310	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04060009.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	04/06/2015 1516			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		25000		1000	4200
C10-C28		20000		700	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	75		49 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V507

Lab Sample ID: 280-67225-9
Client Matrix: Solid % Moisture: 4.9

Date Sampled: 03/30/2015 0909
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271310	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04060006.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	04/06/2015 1400			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		3600	J	1000	4200
C10-C28		2700	J	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	49		49 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V508***

Lab Sample ID: 280-67225-10
Client Matrix: Solid

% Moisture: 9.2

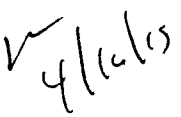
Date Sampled: 03/30/2015 0905
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271310	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04060010.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	04/06/2015 1542			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		4200	J	1100	4400
C10-C28		3000	J	740	4400

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	72		49 - 115



Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V509**

Lab Sample ID: 280-67225-11
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 03/30/2015 0915
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271310	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04060011.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	04/06/2015 1606			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		5000		1000	4100
C10-C28		3300	J	700	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	73		49 - 115

V 4/14/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V510**

Lab Sample ID: 280-67225-12
Client Matrix: Solid % Moisture: 6.3

Date Sampled: 03/30/2015 0922
Date Received: 04/01/2015 0940

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-271310	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-270791	Lab File ID:	04060012.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	04/06/2015 1632			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		5600		1100	4300
C10-C28		3100	J	720	4300

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	76		49 - 115

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-67225-1

SDG #: JP0934
SAF#: RC-232

Date SDG Closed: April 1, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V4X9	280-67225-1	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V500	280-67225-2	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V501	280-67225-3	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V502	280-67225-4	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V503	280-67225-5	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V504	280-67225-6	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V505	280-67225-7	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V506	280-67225-8	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V507	280-67225-9	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V508	280-67225-10	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V509	280-67225-11	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V510	280-67225-12	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 4/1/2015 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.1° C, 3.3° C and 4.1° C.

The samples presented in this report contained large rocks that were not included in the aliquots used for extraction and/or analysis.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Sample J1V506 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The sample has been quantified and reported as the predominant Aroclor. Due to the shared peaks of these two Aroclors, there is increased qualitative and quantitative uncertainty associated with these results.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]anthracene in samples J1V4X9, J1V501, J1V502 and J1V506. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-270827 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Chromium are present in the method blank associated with batch 280-270827. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V4X9; therefore, control limits are not applicable.

The duplicate analysis of sample J1V4X9 exhibited RPD data outside the control limits for Barium, Boron and Mercury, and the associated sample results have been flagged "M". There is no indication that the analytical systems were operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford	**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**	RC-232-091	Page 1 of 3

Collector: STOWE, QG
Company Contact: Joan Kessner
Telephone No.: 375-4688
Project Coordinator: KESSNER, JH
Price Code: 8B
Data Turnaround: 7 days

Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites
Sampling Location: 100-B-35:1 (shallow zone, ver)
SAF No.: RC-232

Ice Chest No.: RCC-08-022
Field Logbook No.: EL-1667-03
COA: 010B352000
Method of Shipment: Commercial Carrier / Fed Ex

Shipped To: TestAmerica Denver
Offsite Property No.: A131397
Bill of Lading/Air Bill No.: see OSPC

Other Labs Shipped To: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool 4C

Preservation				Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container				G/P	aG	aG	aG
No. of Container(s)				1	1	1	1
Volume				250mL	250mL	125mL	250mL
Sample Analysis				See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310
Sample No.	**Matrix**	**Sample Date**	**Sample Time**				
J1V4X9	SOIL	03/30/15	0950	X	X	X	X
J1V500	SOIL	03/30/15	0956	X	X	X	X
J1V501	SOIL	03/30/15	1000	X	X	X	X
J1V502	SOIL	03/30/15	0902	X	X	X	X
J1V503	SOIL	03/30/15	0933	X	X	X	X

280-67225 Chain of Custody

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	3-30-15 1125	C. Martinez / C. Martinez	3/30/15 1125
C. Martinez / C. Martinez	3/30/15 1550	C. Bingham	3/30/15 1550
C. Bingham	3/30/15 1555	1060 Battelle, fridge #34	3/30/15 1555
1060 Battelle, fridge #34	3/31/15 0700	C. Bingham	3/31/15 0700
C. Bingham NCH	3/31/15 0730	Fed Ex	3/31/15
		[illegible signature]	0940 01Apr15

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

19.3 / 1.3 / 1.9 IR Sto,2
01Apr15 - transferred by [illegible]

REVIEWED BY K. [illegible] DATE 3/31/15

JP0934

FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location: 100-B-35:1 (shallow zone, ver)		SAF No.: RC-232
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1667-03	COA: 010B352000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131397		Bill of Lading/Air Bill No.: See ASPC

Price Code: 8B
Data Turnaround: 7 days

Other Labs Shipped To: n/A

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool 4C

Preservation				Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container				G/P	aG	aG	aG
No. of Container(s)				1	1	1	1
Volume				250mL	250mL	125mL	250mL
Sample Analysis				See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310
Sample No.	Matrix	Sample Date	Sample Time				
J1V504	SOIL	03/30/15	0927	X	X	X	X
J1V505	SOIL	03/30/15	0858	X	X	X	X
J1V506	SOIL	03/30/15	0849	X	X	X	X
J1V507	SOIL	03/30/15	0909	X	X	X	X
J1V508	SOIL	03/30/15	0905	X	X	X	X

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CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	3-30-15 1125	S. Martinez/S. Martinez	3/30/15 1125
S. Martinez/S. Martinez	3/30/15 1550	C. Bingham	3/30/15 1550
C. Bingham	3/30/15 1555	1060 Battelle fridge #3A	3/30/15 1555
1060 Battelle fridge #3A	3/31/15 0700	C. Bingham	3/31/15 0700
C. Bingham	3/31/15 0730	Fed Ex	3/31/15
		[signature]	0940 01Apr15

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY K. Woodvine DATE 3/31/15

JP0934

FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-232-091

Collector: STOWE, QG
Company Contact: Joan Kessner
Telephone No.: 375-4688
Project Coordinator: KESSNER, JH
Price Code: 8B
Data Turnaround: 7 days

Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites
Sampling Location: 100-B-35:1 (shallow zone, ver)
SAF No.: RC-232

Ice Chest No.: RCC-08-022
Field Logbook No.: EL-1657-03
COA: 010B352000
Method of Shipment: Commercial Carrier \ Fed Ex

Shipped To: TestAmerica Denver
Offsite Property No.: A131397
Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: n/a

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool 4C

			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C
			Type of Container	G/P	aG	aG	aG
			No. of Container(s)	1	1	1	1
			Volume	250mL	250mL	125mL	250mL
			Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310
Sample No.	**Matrix**	**Sample Date**	**Sample Time**				
J1V509	SOIL	03/30/15	0915	X	X	X	X
J1V510	SOIL	03/30/15	0922	X	X	X	X

CHAIN OF POSSESSION (Sign/Print Names)

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	3-30-15 1125	C Martinez / C Martinez	3/30/15 1125
C Martinez / C Martinez	3/30/15 1550	C. Bingham	3/30/15 1550
C. Bingham	3/30/15 1555	1010 Battelle fridge #34	3/30/15 1555
1010 Battelle fridge #34	3/31/15 0700	C. Bingham	3/31/15 0700
C. Bingham WAT	3/31/15 0730	Fed Ex	3/31/15
		[signature]	1 Apr 15 0940

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY K. Woodrow DATE 3/31/15

JP0934

FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time

WCH-EE-011

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Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-B-35:1		DATA PACKAGE:	JP0934	
VALIDATOR:	ECR	LAB:	TAL	DATE:	4/25/13
			SDG:	JP0934	

ANALYSES PERFORMED					
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	

SAMPLES/MATRIX:					
J1U499	J1U500	J1U501	J1V502	J1U503	J1V504
J1U505	J1U506	J1U507	J1U508	J1U509	J1U510
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments:_____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments:_____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments: no PAP

GENERAL ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments:_____

_____

_____

_____

_____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries aceptable? ..... Yes No N/A
Check materials traceable? ..... Yes No N/A
Check materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments:_____

_____

_____

_____

_____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Method Blank - Batch: 280-270791

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-270791/1-A	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-270791	Lab File ID:	04030005.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.2 g
Analysis Date:	04/03/2015 1051	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	960	U	960	3800
C10-C28	*650*	*U*	*650*	*3800*

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	72	49 - 115

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-270791

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-270791/2-A	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-270791	Lab File ID:	04030006.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.8 g
Analysis Date:	04/03/2015 1115	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-270791/3-A	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-270791	Lab File ID:	04030007.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.9 g
Analysis Date:	04/03/2015 1140	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
C10-C36	83	82	57 - 115	1	23		
C10-C28	82	81	53 - 115	1	23		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl	69	69	49 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-270791

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-270791/2-A	Units: ug/Kg	LCSD Lab Sample ID:	LCSD 280-270791/3-A
Client Matrix:	Solid		Client Matrix:	Solid
Dilution:	1.0		Dilution:	1.0
Analysis Date:	04/03/2015 1115		Analysis Date:	04/03/2015 1140
Prep Date:	04/01/2015 2245		Prep Date:	04/01/2015 2245
Leach Date:	N/A		Leach Date:	N/A

Analyte	LCS Spike *Amount*	LCSD Spike *Amount*	LCS *Result/Qual*	LCSD *Result/Qual*
C10-C36	64900	64700	53600	53100
C10-C28	64900	64700	53300	52800

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-270791

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-67225-1	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-270791	Lab File ID:	04030009.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	04/03/2015 1230			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-67225-1	Analysis Batch:	280-271015	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-270791	Lab File ID:	04030010.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	04/03/2015 1254			Final Weight/Volume:	1 mL
Prep Date:	04/01/2015 2245			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	84	83	57 - 115	0	23		
C10-C28	83	84	56 - 115	0	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	71	72	49 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-270791

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-67225-1	Units: ug/Kg	MSD Lab Sample ID:	280-67225-1
Client Matrix:	Solid		Client Matrix:	Solid
Dilution:	1.0		Dilution:	1.0
Analysis Date:	04/03/2015 1230		Analysis Date:	04/03/2015 1254
Prep Date:	04/01/2015 2245		Prep Date:	04/01/2015 2245
Leach Date:	N/A		Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	11000	70900	70900	70000	69800
C10-C28	6300	70900	70900	65400	65500

Date: 27 April 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Remaining Waste Sites – Soil Full Protocol - Waste Subsite 100-B-35:1
Subject: Inorganic - Data Package No. JP0934-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0934 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V4X9	3/30/15	Soil	C	See note 1
J1V501	3/30/15	Soil	C	See note 1
J1V502	3/30/15	Soil	C	See note 1
J1V503	3/30/15	Soil	C	See note 1
J1V504	3/30/15	Soil	C	See note 1
J1V505	3/30/15	Soil	C	See note 1
J1V506	3/30/15	Soil	C	See note 1
J1V507	3/30/15	Soil	C	See note 1
J1V508	3/30/15	Soil	C	See note 1
J1V509	3/30/15	Soil	C	See note 1
J1V510	3/30/15	Soil	C	See note 1

1 - ICP metals (6010B).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals and 28 days for mercury.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 75% to 125%. Samples with a recovery of less than 30%

and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all antimony (48%), calcium (68%) and silicon (28%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (11%) results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits, all barium (42%) results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. JP0934 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to matrix spike recoveries outside QC limits, all antimony (48%), calcium (68%) and silicon (28%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits, all silicon (11%) results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits, all barium (42%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0934	**REVIEWER: ELR**	**Project: 100-B-35:1**	**PAGE 1 OF 1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silicon	J	All	LCS recovery
Antimony Calcium Silicon	J	All	MS recovery
Barium	J	All	RPD

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V4X9

Lab Sample ID: 280-67225-1
Client Matrix: Solid

% Moisture: 7.5

Date Sampled: 03/30/2015 0950
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 04/03/2015 1507
Prep Date: 04/02/2015 1430

Analysis Batch: 280-271290
Prep Batch: 280-270827

Instrument ID: MT_026
Lab File ID: 26b040315.asc
Initial Weight/Volume: 1.02 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7630	X	1.6	5.3
Antimony		1.3	J	0.40	0.64
Arsenic		4.5		0.70	1.1
Barium		86.0	X M J	0.081	0.53
Beryllium		0.035	U	0.035	0.21
Boron		2.0	B M	1.0	2.1
Cadmium		0.18	B	0.043	0.21
Calcium		9830	X J	14.9	53.0
Chromium		8.4	X	0.061	0.21
Cobalt		9.6	X	0.11	1.1
Copper		19.9		0.23	1.1
Iron		24300	X	4.0	5.3
Lead		6.8		0.29	0.53
Magnesium		4920	X	3.9	21.2
Manganese		349	X	0.11	1.1
Molybdenum		0.37	B	0.28	2.1
Nickel		11.9	X	0.13	4.2
Potassium		1240		43.4	318
Selenium		0.91	U J	0.91	1.1
Silicon		517		6.0	10.6
Silver		0.17	U	0.17	0.21
Sodium		299		62.5	127
Vanadium		59.4		0.10	2.1
Zinc		112	X	0.42	1.1

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 04/03/2015 1532
Prep Date: 04/03/2015 1340

Analysis Batch: 280-271101
Prep Batch: 280-271051

Instrument ID: MT_033
Lab File ID: 150403aa.txt
Initial Weight/Volume: 0.53 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.015	B M	0.0068	0.021

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V500***

Lab Sample ID: 280-67225-2
Client Matrix: Solid % Moisture: 4.2

Date Sampled: 03/30/2015 0956
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-271290	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0			Initial Weight/Volume:	1.11 g
Analysis Date:	04/03/2015 1517			Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6600	X	1.5	4.7
Antimony		*0.50*	*B J*	*0.36*	*0.56*
Arsenic		5.2		0.62	0.94
Barium		39.8	X J	0.071	0.47
Beryllium		0.031	U	0.031	0.19
Boron		0.92	U	0.92	1.9
Cadmium		0.15	B	0.039	0.19
Calcium		12000	X J	13.3	47.0
Chromium		6.7	X	0.055	0.19
Cobalt		8.5	X	0.094	0.94
Copper		16.7		0.20	0.94
Iron		22300	X	3.6	4.7
Lead		4.9		0.25	0.47
Magnesium		5590	X	3.5	18.8
Manganese		283	X	0.094	0.94
Molybdenum		0.24	B	0.24	1.9
Nickel		10.1	X	0.12	3.8
Potassium		1280		38.6	282
Selenium		0.81	U	0.81	0.94
Silicon		385	J	5.3	9.4
Silver		0.15	U	0.15	0.19
Sodium		262		55.5	113
Vanadium		49.3		0.088	1.9
Zinc		42.3	X	0.37	0.94

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.50 g
Analysis Date:	04/03/2015 1544			Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0069	U	0.0069	0.021

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V601

Lab Sample ID: 280-67225-3
Client Matrix: Solid

% Moisture: 5.4

Date Sampled: 03/30/2015 1000
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-271290	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0			Initial Weight/Volume:	1.12 g
Analysis Date:	04/03/2015 1520			Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7270	X	1.5	4.7
Antimony		*1.2*	J	*0.36*	*0.57*
Arsenic		3.8		0.62	0.94
Barium		59.6	X J	0.072	0.47
Beryllium		0.031	U	0.031	0.19
Boron		0.93	U	0.93	1.9
Cadmium		0.13	B	0.039	0.19
Calcium		7150	X J	13.3	47.2
Chromium		7.4	X	0.055	0.19
Cobalt		9.3	X	0.094	0.94
Copper		16.7		0.20	0.94
Iron		26000	X	3.6	4.7
Lead		5.1		0.25	0.47
Magnesium		5660	X	3.5	18.9
Manganese		386	X	0.094	0.94
Molybdenum		0.25	U	0.25	1.9
Nickel		12.3	X	0.12	3.8
Potassium		1180		38.7	283
Selenium		0.81	UJ	0.81	0.94
Silicon		503	J	5.3	9.4
Silver		0.15	U	0.15	0.19
Sodium		297		55.7	113
Vanadium		65.7		0.089	1.9
Zinc		48.3	X	0.38	0.94

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.52 g
Analysis Date:	04/03/2015 1546			Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0067	U	0.0067	0.021

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V502***

Lab Sample ID: 280-67225-4
Client Matrix: Solid

% Moisture: 9.8

Date Sampled: 03/30/2015 0902
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-271290	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0			Initial Weight/Volume:	1.13 g
Analysis Date:	04/03/2015 1523			Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		10900	X	1.5	4.9
Antimony		*0.79*	J	*0.37*	*0.59*
Arsenic		7.1		0.65	0.98
Barium		57.4	X J	0.075	0.49
Beryllium		0.19	B	0.032	0.20
Boron		1.4	B	0.96	2.0
Cadmium		0.15	B	0.040	0.20
Calcium		11400	X J	13.8	49.1
Chromium		11.2	X	0.057	0.20
Cobalt		9.4	X	0.098	0.98
Copper		20.8		0.21	0.98
Iron		24000	X	3.7	4.9
Lead		8.7		0.26	0.49
Magnesium		7210	X	3.6	19.6
Manganese		410	X	0.098	0.98
Molybdenum		0.26	U	0.26	2.0
Nickel		14.9	X	0.12	3.9
Potassium		1920		40.2	294
Selenium		0.84	U	0.84	0.98
Silicon		772	J	5.6	9.8
Silver		0.16	U	0.16	0.20
Sodium		305		57.9	118
Vanadium		47.8		0.092	2.0
Zinc		50.4	X	0.39	0.98

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.57 g
Analysis Date:	04/03/2015 1549			Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0065	U	0.0065	0.020

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V503

Lab Sample ID: 280-67225-5
Client Matrix: Solid % Moisture: 7.0

Date Sampled: 03/30/2015 0933
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-271290	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0			Initial Weight/Volume:	1.09 g
Analysis Date:	04/03/2015 1525			Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				

4/20/15

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8480	X	1.5	4.9
Antimony		1.0	J	0.37	0.59
Arsenic		5.3		0.65	0.99
Barium		59.8	X J	0.075	0.49
Beryllium		0.033	U	0.033	0.20
Boron		1.3	B	0.97	2.0
Cadmium		0.14	B	0.040	0.20
Calcium		10900	X J	13.9	49.3
Chromium		8.9	X	0.057	0.20
Cobalt		9.6	X	0.099	0.99
Copper		18.7		0.21	0.99
Iron		25800	X	3.7	4.9
Lead		6.0		0.27	0.49
Magnesium		5960	X	3.6	19.7
Manganese		371	X	0.099	0.99
Molybdenum		0.29	B	0.26	2.0
Nickel		12.1	X	0.12	3.9
Potassium		1510		40.4	296
Selenium		0.85	U J	0.85	0.99
Silicon		418	J	5.6	9.9
Silver		0.16	U	0.16	0.20
Sodium		400		58.2	118
Vanadium		60.9		0.093	2.0
Zinc		49.7	X	0.39	0.99

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.52 g
Analysis Date:	04/03/2015 1551			Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0069	U	0.0069	0.021

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V504**

Lab Sample ID: 280-67225-6
Client Matrix: Solid

% Moisture: 4.8

Date Sampled: 03/30/2015 0927
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-271290	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0			Initial Weight/Volume:	1.24 g
Analysis Date:	04/03/2015 1539			Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6290	X	1.3	4.2
Antimony		0.85	J	0.32	0.51
Arsenic		3.5		0.56	0.85
Barium		40.4	X J	0.064	0.42
Beryllium		0.028	U	0.028	0.17
Boron		0.83	U	0.83	1.7
Cadmium		0.10	B	0.035	0.17
Calcium		9550	X J	11.9	42.3
Chromium		6.8	X	0.049	0.17
Cobalt		8.8	X	0.085	0.85
Copper		16.2		0.18	0.85
Iron		24000	X	3.2	4.2
Lead		4.3		0.23	0.42
Magnesium		5650	X	3.1	16.9
Manganese		317	X	0.085	0.85
Molybdenum		0.22	U	0.22	1.7
Nickel		11.9	X	0.10	3.4
Potassium		1120		34.7	254
Selenium		0.73	U	0.73	0.85
Silicon		418	J	4.8	8.5
Silver		0.14	U	0.14	0.17
Sodium		258		50.0	102
Vanadium		55.6		0.080	1.7
Zinc		43.9	X	0.34	0.85

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.60 g
Analysis Date:	04/03/2015 1553			Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0058	U	0.0058	0.018

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V505***

Lab Sample ID: 280-67225-7
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 03/30/2015 0858
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-271290	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0			Initial Weight/Volume:	1.06 g
Analysis Date:	04/03/2015 1542			Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8360	X J	1.6	5.1
Antimony		*0.92*	J	*0.39*	*0.61*
Arsenic		5.0		0.67	1.0
Barium		73.1	X J	0.077	0.51
Beryllium		0.034	U	0.034	0.20
Boron		1.1	B	1.0	2.0
Cadmium		0.14	B	0.042	0.20
Calcium		9240	X J	14.3	50.8
Chromium		8.5	X	0.059	0.20
Cobalt		9.2	X	0.10	1.0
Copper		20.2		0.22	1.0
Iron		24800	X	3.9	5.1
Lead		6.7		0.27	0.51
Magnesium		5570	X	3.8	20.3
Manganese		352	X	0.10	1.0
Molybdenum		0.26	U	0.26	2.0
Nickel		11.9	X	0.12	4.1
Potassium		1190		41.7	305
Selenium		0.87	U J	0.87	1.0
Silicon		570	J	5.8	10.2
Silver		0.16	U	0.16	0.20
Sodium		303		59.9	122
Vanadium		59.4		0.096	2.0
Zinc		47.1	X	0.40	1.0

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.50 g
Analysis Date:	04/03/2015 1555			Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.010	B	0.0071	0.022

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V506

Lab Sample ID: 280-67225-8
Client Matrix: Solid

% Moisture: 3.9

Date Sampled: 03/30/2015 0849
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-271290	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0			Initial Weight/Volume:	1.08 g
Analysis Date:	04/03/2015 1544			Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7800	X	1.5	4.8
Antimony		*1.1*	J	*0.37*	*0.58*
Arsenic		3.7		0.64	0.96
Barium		68.7	X J	0.073	0.48
Beryllium		0.032	U	0.032	0.19
Boron		1.4	B	0.94	1.9
Cadmium		0.16	B	0.040	0.19
Calcium		10200	X J	13.6	48.2
Chromium		7.9	X	0.056	0.19
Cobalt		9.3	X	0.096	0.96
Copper		18.5		0.21	0.96
Iron		25600	X	3.7	4.8
Lead		5.7		0.26	0.48
Magnesium		5290	X	3.6	19.3
Manganese		371	X	0.096	0.96
Molybdenum		0.25	U	0.25	1.9
Nickel		11.5	X	0.12	3.9
Potassium		1240		39.5	289
Selenium		0.83	U J	0.83	0.96
Silicon		464	J	5.5	9.6
Silver		0.15	U	0.15	0.19
Sodium		387		56.9	116
Vanadium		67.0		0.091	1.9
Zinc		51.4	X	0.38	0.96

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.58 g
Analysis Date:	04/03/2015 1558			Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.025		0.0060	0.018

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V507

Lab Sample ID: 280-67225-9
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 03/30/2015 0909
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-271290	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0			Initial Weight/Volume:	1.05 g
Analysis Date:	04/03/2015 1547			Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7700	X J	1.6	5.0
Antimony		*1.1*		*0.38*	*0.60*
Arsenic		4.1		0.66	1.0
Barium		55.2	X J	0.076	0.50
Beryllium		0.033	U	0.033	0.20
Boron		1.2	B	0.98	2.0
Cadmium		0.14	B	0.041	0.20
Calcium		15000	X J	14.1	50.1
Chromium		8.4	X	0.058	0.20
Cobalt		9.3	X	0.10	1.0
Copper		18.3		0.22	1.0
Iron		*24600*	X	3.8	*5.0*
Lead		5.2		0.27	0.50
Magnesium		6550	X	3.7	20.0
Manganese		349	X	0.10	1.0
Molybdenum		0.26	U	0.26	2.0
Nickel		12.8	X	0.12	4.0
Potassium		1310		41.1	301
Selenium		0.86	U J	0.86	1.0
Silicon		604	J	5.7	10.0
Silver		0.16	U	0.16	0.20
Sodium		363		59.1	120
Vanadium		63.3		0.094	2.0
Zinc		46.3	X	0.40	1.0

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.58 g
Analysis Date:	04/03/2015 1600			Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0073	B	0.0060	0.018

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V508

Lab Sample ID: 280-67225-10
Client Matrix: Solid % Moisture: 9.2

Date Sampled: 03/30/2015 0905
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-271290	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0			Initial Weight/Volume:	1.20 g
Analysis Date:	04/03/2015 1550			Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9620	X J	1.4	4.6
Antimony		*1.0*	J	*0.35*	*0.55*
Arsenic		5.6		0.61	0.92
Barium		55.6	X J	0.070	0.46
Beryllium		0.10	B	0.030	0.18
Boron		1.7	B	0.90	1.8
Cadmium		0.15	B	0.038	0.18
Calcium		16600	X J	12.9	45.9
Chromium		10.1	X	0.053	0.18
Cobalt		9.2	X	0.092	0.92
Copper		21.7		0.20	0.92
Iron		23200	X	3.5	4.6
Lead		7.9		0.25	0.46
Magnesium		6460	X	3.4	18.3
Manganese		376	X	0.092	0.92
Molybdenum		0.24	U	0.24	1.8
Nickel		14.2	X	0.11	3.7
Potassium		1400		37.6	275
Selenium		0.79	U J	0.79	0.92
Silicon		381		5.2	9.2
Silver		0.15	U	0.15	0.18
Sodium		303		54.1	110
Vanadium		51.9		0.086	1.8
Zinc		47.5	X	0.37	0.92

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.56 g
Analysis Date:	04/03/2015 1602			Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.013	B	0.0065	0.020

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V509**

Lab Sample ID: 280-67225-11
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 03/30/2015 0915
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 04/03/2015 1553
Prep Date: 04/02/2015 1430

Analysis Batch: 280-271290
Prep Batch: 280-270827

Instrument ID: MT_026
Lab File ID: 26b040315.asc
Initial Weight/Volume: 1.12 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7490	X	1.5	4.7
Antimony		*0.77*	J	*0.36*	*0.56*
Arsenic		3.7		0.62	0.94
Barium		52.6	X J	0.071	0.47
Beryllium		0.031	U	0.031	0.19
Boron		1.0	B	0.92	1.9
Cadmium		0.13	B	0.038	0.19
Calcium		9930	X J	13.2	46.8
Chromium		7.9	X	0.054	0.19
Cobalt		8.8	X	0.094	0.94
Copper		16.9		0.20	0.94
Iron		24300	X	3.6	4.7
Lead		5.5		0.25	0.47
Magnesium		5410	X	3.5	18.7
Manganese		336	X	0.094	0.94
Molybdenum		0.24	U	0.24	1.9
Nickel		12.2	X	0.12	3.7
Potassium		1180		38.4	281
Selenium		0.81	U J	0.81	0.94
Silicon		556	J	5.3	9.4
Silver		0.15	U	0.15	0.19
Sodium		334		55.3	112
Vanadium		60.0		0.088	1.9
Zinc		44.2	X	0.37	0.94

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 04/03/2015 1605
Prep Date: 04/03/2015 1340

Analysis Batch: 280-271101
Prep Batch: 280-271051

Instrument ID: MT_033
Lab File ID: 150403aa.txt
Initial Weight/Volume: 0.52 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0070	B	0.0067	0.021

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V510**

Lab Sample ID: 280-67225-12
Client Matrix: Solid % Moisture: 6.3

Date Sampled: 03/30/2015 0922
Date Received: 04/01/2015 0940

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 04/03/2015 1555
Prep Date: 04/02/2015 1430

Analysis Batch: 280-271290
Prep Batch: 280-270827

Instrument ID: MT_026
Lab File ID: 26b040315.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

V 4/20/15

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6230	X J	1.4	4.5
Antimony		*0.85*	J	*0.34*	*0.54*
Arsenic		3.4		0.60	0.90
Barium		45.9	X J	0.069	0.45
Beryllium		0.030	U	0.030	0.18
Boron		0.97	B	0.89	1.8
Cadmium		0.11	B	0.037	0.18
Calcium		16800	X J	12.8	45.2
Chromium		6.4	X	0.052	0.18
Cobalt		8.2	X	0.090	0.90
Copper		18.4		0.20	0.90
Iron		22600	X	3.4	4.5
Lead		4.7		0.24	0.45
Magnesium		4560	X	3.3	18.1
Manganese		293	X	0.090	0.90
Molybdenum		0.24	U	0.24	1.8
Nickel		9.8	X	0.11	3.6
Potassium		963		37.1	271
Selenium		0.78	U	0.78	0.90
Silicon		375	J	5.1	9.0
Silver		0.14	U	0.14	0.18
Sodium		250		53.4	109
Vanadium		55.3		0.085	1.8
Zinc		41.3	X	0.36	0.90

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 04/03/2015 1612
Prep Date: 04/03/2015 1340

Analysis Batch: 280-271101
Prep Batch: 280-271051

Instrument ID: MT_033
Lab File ID: 150403aa.txt
Initial Weight/Volume: 0.58 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.012	B	0.0061	0.019

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-67225-1

SDG #: JP0934
SAF#: RC-232

Date SDG Closed: April 1, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V4X9	280-67225-1	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V500	280-67225-2	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V501	280-67225-3	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V502	280-67225-4	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V503	280-67225-5	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V504	280-67225-6	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V505	280-67225-7	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V506	280-67225-8	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V507	280-67225-9	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V508	280-67225-10	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V509	280-67225-11	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V510	280-67225-12	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 4/1/2015 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.1° C, 3.3° C and 4.1° C.

The samples presented in this report contained large rocks that were not included in the aliquots used for extraction and/or analysis.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Sample J1V506 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The sample has been quantified and reported as the predominant Aroclor. Due to the shared peaks of these two Aroclors, there is increased qualitative and quantitative uncertainty associated with these results.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]anthracene in samples J1V4X9, J1V501, J1V502 and J1V506. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-270827 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Chromium are present in the method blank associated with batch 280-270827. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V4X9; therefore, control limits are not applicable.

The duplicate analysis of sample J1V4X9 exhibited RPD data outside the control limits for Barium, Boron and Mercury, and the associated sample results have been flagged "M". There is no indication that the analytical systems were operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location: 100-B-35:1 (shallow zone, ver)		SAF No.: RC-232
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1667-03	COA: 0108352000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131397		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B
Data Turnaround: 7 days

Other Labs Shipped To: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	G/P	aG	aG	aG
No. of Container(s)	1	1	1	1
Volume	250mL	250mL	125mL	250mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310

280-67225 Chain of Custody

Sample No.	Matrix	Sample Date	Sample Time	See item (1)	PCBs - 8082	TPH-Diesel	PAHs - 8310
J1V4X9	SOIL	03/30/15	0950	X	X	X	X
J1V500	SOIL	03/30/15	0956	X	X	X	X
J1V501	SOIL	03/30/15	1000	X	X	X	X
J1V502	SOIL	03/30/15	0902	X	X	X	X
J1V503	SOIL	03/30/15	0933	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe [signature]	3-30-15 1125	C. Martinez/C. Martinez	3/30/15 1125
C. Martinez/C. Martinez	3/30/15 1550	C. Bingham [signature]	3/30/15 1550
C. Bingham [signature]	3/30/15 1555	1060 Battelle, fridge #34	3/30/15 1555
1060 Battelle, fridge #34	3/31/15 0700	C. Bingham [signature]	3/31/15 0700
C. Bingham [signature] WCH	3/31/15 0730	Fed Ex	3/31/15
		[signature]	0940 01Apr15

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

19.31.39 IR 5to2
01Apr15 - transferred by [initials]

REVIEWED BY K. [signature]
DATE 3/31/15

JP0934

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location: 100-B-35:1 (shallow zone, ver)		SAF No.: RC-232
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1667-03	COA: 010B352000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131397		Bill of Lading/Air Bill No.: See OSPC
Price Code: 8B	Data Turnaround: 7 days		

Other Labs Shipped To: n/A

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	G/P	aG	aG	aG
No. of Container(s)	1	1	1	1
Volume	250mL	250mL	125mL	250mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310

Sample No.	Matrix	Sample Date	Sample Time	(1)	PCBs	TPH	PAHs
J1V504	SOIL	03/30/15	0927	X	X	X	X
J1V505	SOIL	03/30/15	0858	X	X	X	X
J1V506	SOIL	03/30/15	0849	X	X	X	X
J1V507	SOIL	03/30/15	0909	X	X	X	X
J1V508	SOIL	03/30/15	0905	X	X	X	X

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CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	3-30-15 1125	S.Martinez/S.Martinez	3/30/15 1125
S.Martinez/S.Martinez	3/30/15 1550	C. Bingham	3/30/15 1550
C. Bingham	3/30/15 1555	1060 Battelle, fridge #3A	3/30/15 1555
1060 Battelle fridge #3A	3/31/15 0700	C. Bingham	3/31/15 0700
C. Bingham WCH	3/31/15 0730	Fed EX	3/31/15
		[signature]	0940 01Apr15

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY K. Woodworth DATE 3/31/15

JP0934

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4888	Project Coordinator: KESSNER, JH
Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location: 100-B-35:1 (shallow zone, ver)		SAF No.: RC-232
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1667-03	COA: 010B352000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131397		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B
Data Turnaround: 7 days

Other Labs Shipped To: n/a

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool 4C

		Preservation		Cool 4C	Cool 4C	Cool 4C	Cool 4C
		Type of Container		G/P	aG	aG	aG
		No. of Container(s)		1	1	1	1
		Volume		250mL	250mL	125mL	250mL
		Sample Analysis		See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310
Sample No.	Matrix	Sample Date	Sample Time				
JIV509	SOIL	03/30/15	0915	X	X	X	X
JIV510	SOIL	03/30/15	0922	X	X	X	X

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	3-30-15 1125	C. Martinez / C. Martinez	3/30/15 1125
C. Martinez / C. Martinez	3/30/15 1550	C. Bingham	3/30/15 1550
C. Bingham	3/30/15 1555	1060 Battelle fridge #34	3/30/15 1555
1060 Battelle fridge #34	3/31/15 0700	C. Bingham	3/31/15 0700
C. Bingham WCH	3/31/15 0730	Fed Ex	3/31/15
		[signature]	01Apr15 0940

Disposed By | Date/Time

FINAL SAMPLE DISPOSITION | Disposal Method

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury)

REVIEWED BY K. Woodward DATE 3/31/15

JPO934

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-B-35:1			DATA PACKAGE: JP0934		
VALIDATOR: ELR		LAB: TAL		DATE: 4/25/15	
			SDG: JP0934		

ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		

SAMPLES/MATRIX				
J1U4X9	J1U500	J1U501	J1U502	J1U503
J1U504	J1U505	J1U506	J1U507	J1U508
J1U509	J1U510			
				Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:_____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: LCS silicon (1170) -J all
MS Antmy (4870) calcium (6870) silicon (2820) -J all

no DAs

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: barium 493 - 1 cell

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A
ICP serial dilution %D values acceptable? ..... Yes No N/A
ICP post digestion spike required? ..... Yes No N/A
ICP post digestion spike values acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

8. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... (Yes) No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No (N/A)

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... (Yes) No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

_____

_____

_____

_____

_____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Method Blank - Batch: 280-270827

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-270827/1-A	Analysis Batch:	280-271290	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	04/03/2015 1502	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	*0.38*	*U*	*0.38*	*0.60*
Arsenic	0.66	U	0.66	1.0
Barium	0.076	U	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	14.1	U	14.1	50.0
Chromium	0.0620	B	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	3.8	U	3.8	5.0
Lead	0.27	U	0.27	0.50
Magnesium	3.7	U	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.40	U	0.40	1.0

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Lab Control Sample - Batch: 280-270827

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-270827/2-A	Analysis Batch:	280-271290	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	04/03/2015 1504	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	192.2	96	82 - 116	
Antimony	50.0	49.23	98	82 - 110	
Arsenic	100	95.49	95	85 - 110	
Barium	200	195.0	97	87 - 112	
Beryllium	5.00	4.86	97	84 - 114	
Boron	100	95.70	96	80 - 120	
Cadmium	10.0	10.76	108	87 - 110	
Calcium	5000	4867	97	82 - 114	
Chromium	20.0	19.28	96	84 - 114	
Cobalt	50.0	48.12	96	87 - 110	
Copper	25.0	24.52	98	88 - 110	
Iron	100	98.73	99	87 - 120	
Lead	50.0	49.14	98	86 - 110	
Magnesium	5000	4777	96	90 - 110	
Manganese	50.0	47.99	96	88 - 110	
Molybdenum	100	98.87	99	86 - 110	
Nickel	50.0	47.72	95	87 - 110	
Potassium	5000	4933	99	89 - 110	
Selenium	200	194.6	97	83 - 110	
Silicon	1000	111.2	11	10 - 70	
Silver	5.00	4.66	93	87 - 114	
Sodium	5000	5135	103	90 - 112	
Vanadium	50.0	48.62	97	88 - 110	
Zinc	50.0	47.59	95	76 - 114	

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Matrix Spike - Batch: 280-270827

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-67225-1	Analysis Batch:	280-271290	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.16 g
Analysis Date:	04/03/2015 1515	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	7630		186	9763	1147	50 - 200	4
Antimony	1.3		46.6	23.57	48	20 - 200	
Arsenic	4.5		93.2	77.76	79	76 - 111	
Barium	86.0		186	223.0	74	52 - 159	
Beryllium	0.035	U	4.66	3.70	79	72 - 105	
Boron	*2.0*	*B*	*93.2*	*76.20*	*80*	*80 - 120*	
Cadmium	0.18	B	9.32	8.73	92	40 - 130	
Calcium	9830		4660	13010	68	43 - 165	
Chromium	8.4		18.6	24.44	86	70 - 200	
Cobalt	9.6		46.6	46.50	79	72 - 106	
Copper	19.9		23.3	37.75	77	37 - 187	
Iron	24300		93.2	25140	942	70 - 200	4
Lead	6.8		46.6	43.06	78	70 - 200	
Magnesium	4920		4660	8705	81	64 - 145	
Manganese	349		46.6	398.5	107	40 - 200	4
Molybdenum	0.37	B	93.2	77.04	82	75 - 103	
Nickel	11.9		46.6	48.13	78	61 - 126	
Potassium	1240		4660	5461	91	56 - 172	
Selenium	0.91	U	186	150.6	81	76 - 104	
Silicon	517		932	780.5	28	20 - 200	
Silver	0.17	U	4.66	3.53	76	75 - 141	
Sodium	299		4660	4681	94	78 - 111	
Vanadium	59.4		46.6	104.4	97	50 - 169	
Zinc	112		46.6	158.8	101	70 - 200	

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Duplicate - Batch: 280-270827

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-67225-1	Analysis Batch:	280-271290	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-270827	Lab File ID:	26b040315.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.11 g
Analysis Date:	04/03/2015 1512	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	04/02/2015 1430				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	7630		7215	6	40	
Antimony	1.3		1.16	10	40	
Arsenic	4.5		3.42	27	30	
Barium	86.0		56.32	42	30	M
Beryllium	0.035	U	0.032	NC	30	U
Boron	2.0	B	1.42	35	30	B M
Cadmium	0.18	B	0.155	16	30	B
Calcium	9830		8909	10	30	
Chromium	8.4		7.42	12	40	
Cobalt	9.6		7.91	19	30	
Copper	19.9		17.56	12	30	
Iron	24300		21760	11	40	
Lead	6.8		4.83	33	40	
Magnesium	4920		4271	14	30	
Manganese	349		304.7	13	40	
Molybdenum	0.37	B	0.25	NC	30	U
Nickel	11.9		9.89	19	30	
Potassium	1240		1139	9	40	
Selenium	0.91	U	0.84	NC	30	U
Silicon	517		561.6	8	40	
Silver	0.17	U	0.16	NC	30	U
Sodium	299		305.4	2	30	
Vanadium	59.4		54.89	8	30	
Zinc	112		109.9	1	40	

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Method Blank - Batch: 280-271051

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-271051/1-A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	04/03/2015 1528	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-271051

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-271051/2-A	Analysis Batch:	280-271101	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	04/03/2015 1530	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.381	91	87 - 111	

Matrix Spike - Batch: 280-271051

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-67225-1	Analysis Batch:	280-271101	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.56 g
Analysis Date:	04/03/2015 1537	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.015	B	0.482	0.459	92	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Duplicate - Batch: 280-271051

Method: 7471A
Preparation: 7471A

Lab Sample ID:	*280-67225-1*	*Analysis Batch:*	*280-271101*	*Instrument ID:*	*MT_033*
Client Matrix:	Solid	Prep Batch:	280-271051	Lab File ID:	150403aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.57 g
Analysis Date:	04/03/2015 1535	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	04/03/2015 1340				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.015	B	0.0117	23	20	B M

Date: 27 April 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Remaining Waste Sites – Soil Full Protocol - Waste Subsite 100-B-35:1
Subject: PCB - Data Package No. JP0934-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0934 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V4X9	3/30/15	Soil	C	See note 1
J1V501	3/30/15	Soil	C	See note 1
J1V502	3/30/15	Soil	C	See note 1
J1V503	3/30/15	Soil	C	See note 1
J1V504	3/30/15	Soil	C	See note 1
J1V505	3/30/15	Soil	C	See note 1
J1V506	3/30/15	Soil	C	See note 1
J1V507	3/30/15	Soil	C	See note 1
J1V508	3/30/15	Soil	C	See note 1
J1V509	3/30/15	Soil	C	See note 1
J1V510	3/30/15	Soil	C	See note 1

1 – PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

· Holding Times

Holding times are not applicable for PCB analysis.

· Method Blank

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

· Accuracy

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the

unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data Package No. JP0934 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: JP0934	REVIEWER: ELR	Project: 100-B-35:1	PAGE_1_OF_1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V4X9**

Lab Sample ID: 280-67225-1
Client Matrix: Solid % Moisture: 7.5

Date Sampled: 03/30/2015 0950
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1438			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		3.0	U	3.0	11
Aroclor 1221		8.6	U	8.6	18
Aroclor 1232		2.1	U	2.1	11
Aroclor 1242		5.0	U	5.0	11
Aroclor 1248		5.0	U	5.0	11
Aroclor 1254		2.8	U	2.8	11
Aroclor 1260		2.8	U	2.8	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	83		59 - 130
Tetrachloro-m-xylene	75		53 - 128

4/24/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V500

Lab Sample ID: 280-67225-2
Client Matrix: Solid

% Moisture: 4.2

Date Sampled: 03/30/2015 0956
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	30.9 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1501			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		*8.1*	*U*	*8.1*	*17*
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	84		59 - 130
Tetrachloro-m-xylene	75		53 - 128

V 4/26/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V501**

Lab Sample ID: 280-67225-3
Client Matrix: Solid % Moisture: 5.4

Date Sampled: 03/30/2015 1000
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1524			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	84		59 - 130
Tetrachloro-m-xylene	72		53 - 128

4/24/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V502***

Lab Sample ID: 280-67225-4
Client Matrix: Solid % Moisture: 9.8

Date Sampled: 03/30/2015 0902
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1547			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		3.0	U	3.0	11
Aroclor 1221		*8.6*	*U*	*8.6*	*18*
Aroclor 1232		2.1	U	2.1	11
Aroclor 1242		5.0	U	5.0	11
Aroclor 1248		5.0	U	5.0	11
Aroclor 1254		2.8	U	2.8	11
Aroclor 1260		2.8	U	2.8	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	76		59 - 130
Tetrachloro-m-xylene	63		53 - 128

4/26/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V503**

Lab Sample ID: 280-67225-5
Client Matrix: Solid % Moisture: 7.0

Date Sampled: 03/30/2015 0933
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1656			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	11
Aroclor 1221		*8.5*	*U*	*8.5*	*17*
Aroclor 1232		2.1	U	2.1	11
Aroclor 1242		4.9	U	4.9	11
Aroclor 1248		4.9	U	4.9	11
Aroclor 1254		2.7	U	2.7	11
Aroclor 1260		2.7	U	2.7	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	78		59 - 130
Tetrachloro-m-xylene	70		53 - 128

4/20/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V504**

Lab Sample ID: 280-67225-6
Client Matrix: Solid % Moisture: 4.8

Date Sampled: 03/30/2015 0927
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1719			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		*8.3*	*U*	*8.3*	*17*
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	82		59 - 130
Tetrachloro-m-xylene	66		53 - 128

4/24/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V505***

Lab Sample ID: 280-67225-7
Client Matrix: Solid % Moisture: 7.2

Date Sampled: 03/30/2015 0858
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	30.3 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1742			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		3.0	U	3.0	11
Aroclor 1221		*8.6*	*U*	*8.6*	*18*
Aroclor 1232		2.1	U	2.1	11
Aroclor 1242		5.0	U	5.0	11
Aroclor 1248		5.0	U	5.0	11
Aroclor 1254		2.8	U	2.8	11
Aroclor 1260		3.0	J	2.8	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	81		59 - 130
Tetrachloro-m-xylene	68		53 - 128

4/26/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V506**

Lab Sample ID: 280-67225-8
Client Matrix: Solid

% Moisture: 3.9

Date Sampled: 03/30/2015 0849
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1805			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		7.4	J	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	71		59 - 130
Tetrachloro-m-xylene	67		53 - 128

V 4/26/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V507**

Lab Sample ID: 280-67225-9
Client Matrix: Solid % Moisture: 4.9

Date Sampled: 03/30/2015 0909
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	31.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1829			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	75		59 - 130
Tetrachloro-m-xylene	70		53 - 128

V 4/24/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V508

Lab Sample ID: 280-67225-10
Client Matrix: Solid % Moisture: 9.2

Date Sampled: 03/30/2015 0905
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1852			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		3.0	U	3.0	11
Aroclor 1221		8.7	U	8.7	18
Aroclor 1232		2.2	U	2.2	11
Aroclor 1242		5.0	U	5.0	11
Aroclor 1248		5.0	U	5.0	11
Aroclor 1254		2.8	U	2.8	11
Aroclor 1260		2.8	U	2.8	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	77		59 - 130
Tetrachloro-m-xylene	68		53 - 128

4/26/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V509**

Lab Sample ID: 280-67225-11
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 03/30/2015 0915
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	32.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1915			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.7
Aroclor 1221		*7.7*	*U*	*7.7*	*16*
Aroclor 1232		1.9	U	1.9	9.7
Aroclor 1242		4.5	U	4.5	9.7
Aroclor 1248		4.5	U	4.5	9.7
Aroclor 1254		2.5	U	2.5	9.7
Aroclor 1260		2.5	U	2.5	9.7

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	77		59 - 130
Tetrachloro-m-xylene	68		53 - 128

4/20/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V510

Lab Sample ID: 280-67225-12
Client Matrix: Solid % Moisture: 6.3

Date Sampled: 03/30/2015 0922
Date Received: 04/01/2015 0940

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-270852	Initial Weight/Volume:	31.3 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	04/03/2015 1938			Injection Volume:	1 uL
Prep Date:	04/02/2015 1101			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.2	U	8.2	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	80		59 - 130
Tetrachloro-m-xylene	72		53 - 128

4/2/15

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-67225-1

SDG #: JP0934
SAF#: RC-232

Date SDG Closed: April 1, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V4X9	280-67225-1	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V500	280-67225-2	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V501	280-67225-3	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V502	280-67225-4	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V503	280-67225-5	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V504	280-67225-6	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V505	280-67225-7	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V506	280-67225-8	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V507	280-67225-9	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V508	280-67225-10	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V509	280-67225-11	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V510	280-67225-12	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 4/1/2015 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.1° C, 3.3° C and 4.1° C.

The samples presented in this report contained large rocks that were not included in the aliquots used for extraction and/or analysis.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Sample J1V506 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The sample has been quantified and reported as the predominant Aroclor. Due to the shared peaks of these two Aroclors, there is increased qualitative and quantitative uncertainty associated with these results.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]anthracene in samples J1V4X9, J1V501, J1V502 and J1V506. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-270827 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Chromium are present in the method blank associated with batch 280-270827. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V4X9; therefore, control limits are not applicable.

The duplicate analysis of sample J1V4X9 exhibited RPD data outside the control limits for Barium, Boron and Mercury, and the associated sample results have been flagged "M". There is no indication that the analytical systems were operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688
Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location: 100-B-35:1 (shallow zone, ver)	Project Coordinator: KESSNER, JH
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1667-03	SAF No.: RC-232
Shipped To: TestAmerica Denver	COA: 010B352000	Method of Shipment: Commercial Carrier / Fed Ex
Other Labs Shipped To: N/A	Offsite Property No.: A131397	Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B | Data Turnaround: 7 days

280-67225 Chain of Custody

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C								
Type of Container	G/P	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	250mL	250mL	125mL	250mL								
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310								

Sample No.	Matrix	Sample Date	Sample Time				
J1V4X9	SOIL	03/30/15	0950	X	X	X	X
J1V500	SOIL	03/30/15	0956	X	X	X	X
J1V501	SOIL	03/30/15	1000	X	X	X	X
J1V502	SOIL	03/30/15	0902	X	X	X	X
J1V503	SOIL	03/30/15	0933	X	X	X	X

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CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	3-30-15 1125	C. Martinez / C. Martinez	3/30/15 1125
C. Martinez / C. Martinez	3/30/15 1550	C. Bingham	3/30/15 1550
C. Bingham	3/30/15 1555	1060 Battelle, fridge #3A	3/30/15 1555
1060 Battelle, fridge #3A	3/31/15 0700	C. Bingham	3/31/15 0700
C. Bingham WCH	3/31/15 0730	Fed Ex	3/31/15
		[signature]	0940 01Apr15

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

19, 3.1, 3.9 IRSto,2
01Apr15 transferred by [initials]

REVIEWED BY K. Woodhouse DATE 3/31/15

JP0934

FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-232-091

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location: 100-B-35:1 (shallow zone, ver)		SAF No.: RC-232
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1667-03	COA: 0108352000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A13397		Bill of Lading/Air Bill No.: See OSRC
Other Labs Shipped To: N/A			

Price Code: 8B

Data Turnaround: 7 days

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C								
Type of Container	G/P	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	250mL	250mL	125mL	250mL								
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D+	PAHs - 8310								
Sample No.	Matrix	Sample Date	Sample Time									
J1V504	SOIL	03/30/15	0927	X	X	X	X					
J1V505	SOIL	03/30/15	0858	X	X	X	X					
J1V506	SOIL	03/30/15	0849	X	X	X	X					
J1V507	SOIL	03/30/15	0909	X	X	X	X					
J1V508	SOIL	03/30/15	0905	X	X	X	X					

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool 4C

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury)

REVIEWED BY K.Williams DATE 3/31/15

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: [illegible] Date/Time: 1125 3-30-15	Received By/Stored In: [illegible] Date/Time: 1125 3/30/15
Relinquished By/Removed From: Courier Stowe Date/Time: 1550 3/30/15	Received By/Stored In: C. Bingham Date/Time: 3/30/15 1550
Relinquished By/Removed From: C. Bingham Date/Time: 3/30/15 1555	Received By/Stored In: 1060 Battelle fridge #349 Date/Time: 3/30/15 1555
Relinquished By/Removed From: 1060 Battelle fridge #349 Date/Time: 3/31/15 0700	Received By/Stored In: C. Bingham Date/Time: 3/31/15 0700
Relinquished By/Removed From: C. Bingham WCH Date/Time: 3/31/15 0730	Received By/Stored In: Fed EX Date/Time: 3/31/15
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time: 0940 01 Apr 15
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:

FINAL SAMPLE DISPOSITION: Disposal Method: Disposed By: Date/Time:

JP0934

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location: 100-B-35:1 (shallow zone, ver)		SAF No.: RC-232
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1667-03	COA: 010B352000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131397		Bill of Lading/Air Bill No.: See OSPC
Other Labs Shipped To: n/a			

Price Code: 88

Data Turnaround: 7 days

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	G/P	aG	aG	aG
No. of Container(s)	1	1	1	1
Volume	250mL	250mL	125mL	250mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310

Sample No.	Matrix	Sample Date	Sample Time				
			0915	X	X	X	X
J1V509	SOIL	03/30/15					
J1V510	SOIL	03/30/15	0922	X	X	X	X

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CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature] 3-30-15	1125	C. Martinez / C. Martinez 3/30/15	1125
C. Martinez / C. Martinez 3/30/15	1550	C. Bingham 3/30/15	1550
C. Bingham 3/30/15	1555	1010 Battelle fridge #34	3/30/15 1555
1010 Battelle fridge #34 3/31/15	0700	C. Bingham	3/31/15 0700
C. Bingham WCH 3/31/15	0730	Fed Ex	3/31/15
		[signature]	1 Apr 15 0940

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) (Mercury)

REVIEWED BY K. Woodmansee DATE 3/31/15

JP0934

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-C-35:1			DATA PACKAGE: JP0934		
VALIDATOR: ELR		LAB: TAL		DATE: 4/25/15	
			SDG: JP0934		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J1V4K9	J1U500	J1U501	J1U502	J1U503	
J1U504	J1U505	J1U506	J1U507	J1U508	
J1U509	J1U510				
				Soil	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:_____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

DDT and endrin breakdowns acceptable? ..... Yes No N/A

Comments:_____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... Yes No N/A
Surrogate recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments:

no PA

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A
Positive results resolved acceptably? ..... Yes No N/A

Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments: _____

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A
Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A
Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries acceptable? ..... Yes No N/A
GPC cleanup performed? ..... Yes No N/A
GPC check performed? ..... Yes No N/A
GPC check recoveries acceptable? ..... Yes No N/A
GPC calibration performed? ..... Yes No N/A
GPC calibration check performed? ..... Yes No N/A
GPC calibration check retention times acceptable? ..... Yes No N/A
Check/calibration materials traceable? ..... Yes No N/A
Check/calibration materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Method Blank - Batch: 280-270852

Method: 8082
Preparation: 3550C

Lab Sample ID:	MB 280-270852/1-A	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-270852	Lab File ID:	04031518.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.5 g
Analysis Date:	04/03/2015 1351	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	04/02/2015 1101			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Aroclor 1016	2.6	U	2.6	9.2
Aroclor 1221	7.4	U	7.4	15
Aroclor 1232	1.8	U	1.8	9.2
Aroclor 1242	4.3	U	4.3	9.2
Aroclor 1248	4.3	U	4.3	9.2
Aroclor 1254	2.4	U	2.4	9.2
Aroclor 1260	2.4	U	2.4	9.2

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	92	59 - 130
Tetrachloro-m-xylene	77	53 - 128

Lab Control Sample - Batch: 280-270852

Method: 8082
Preparation: 3550C

Lab Sample ID:	LCS 280-270852/2-A	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-270852	Lab File ID:	04031519.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	04/03/2015 1414	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	04/02/2015 1101			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aroclor 1016	32.7	26.9	82	54 - 132	
Aroclor 1260	32.7	28.9	88	62 - 129	

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	92	59 - 130
Tetrachloro-m-xylene	82	53 - 128

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-270852

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-67225-4	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-270852	Lab File ID:	04031524.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.3 g
Analysis Date:	04/03/2015 1610			Final Weight/Volume:	5 mL
Prep Date:	04/02/2015 1101			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-67225-4	Analysis Batch:	280-270997	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-270852	Lab File ID:	04031525.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.2 g
Analysis Date:	04/03/2015 1633			Final Weight/Volume:	5 mL
Prep Date:	04/02/2015 1101			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Aroclor 1016	71	73	54 - 132	0	26		
Aroclor 1260	70	72	62 - 129	0	26		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Decachlorobiphenyl	76	80	59 - 130
Tetrachloro-m-xylene	64	67	53 - 128

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-270852

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-67225-4	Units:	ug/Kg	MSD Lab Sample ID:	280-67225-4
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	04/03/2015 1610			Analysis Date:	04/03/2015 1633
Prep Date:	04/02/2015 1101			Prep Date:	04/02/2015 1101
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Aroclor 1016	3.0	U	35.4	34.4	25.2	25.1
Aroclor 1260	2.8	U	35.4	34.4	24.8	24.8

Date: 27 April 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Remaining Waste Sites – Soil Full Protocol - Waste Subsite 100-B-35:1
Subject: Polyaromatic Hydrocarbon - Data Package No. JP0934-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0934 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V4X9	3/30/15	Soil	C	See note 1
J1V501	3/30/15	Soil	C	See note 1
J1V502	3/30/15	Soil	C	See note 1
J1V503	3/30/15	Soil	C	See note 1
J1V504	3/30/15	Soil	C	See note 1
J1V505	3/30/15	Soil	C	See note 1
J1V506	3/30/15	Soil	C	See note 1
J1V507	3/30/15	Soil	C	See note 1
J1V508	3/30/15	Soil	C	See note 1
J1V509	3/30/15	Soil	C	See note 1
J1V510	3/30/15	Soil	C	See note 1

1 – Polyaromatic hydrocarbons by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blank was submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in

duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. JP0934 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

POLYAROMATIC HYDROCARBON DATA QUALIFICATION SUMMARY*

SDG: JP0934	REVIEWER: ELR	Project: 100-B-35:1	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V4X9**

Lab Sample ID: 280-67225-1
Client Matrix: Solid % Moisture: 7.5

Date Sampled: 03/30/2015 0950
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	30.3 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1208			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	110
Acenaphthylene		*9.6*	*U*	*9.6*	*110*
Anthracene		3.3	U	3.3	21
Benzo[a]anthracene		9.1	J X	3.4	16
Benzo[a]pyrene		17		6.9	16
Benzo[b]fluoranthene		65		4.5	16
Benzo[g,h,i]perylene		55		7.7	32
Benzo[k]fluoranthene		10	J	4.2	16
Chrysene		14	J	5.2	43
Dibenzo(a,h)anthracene		12	U	12	32
Fluoranthene		17	J	14	43
Fluorene		5.6	U	5.6	32
Indeno[1,2,3-cd]pyrene		51		13	32
Naphthalene		13	U	13	110
Phenanthrene		13	U	13	43
Pyrene		23	J	13	43

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	94		72 - 115

4/26/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: J1V500

Lab Sample ID: 280-67225-2
Client Matrix: Solid

% Moisture: 4.2

Date Sampled: 03/30/2015 0956
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1238			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.1	U	9.1	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	92		72 - 115

4/26/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V501**

Lab Sample ID: 280-67225-3
Client Matrix: Solid

% Moisture: 5.4

Date Sampled: 03/30/2015 1000
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	32.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1410			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	U	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.4	J X	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.1	U	7.1	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.2	U	5.2	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	99
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	88		72 - 115

4/24/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V502***

Lab Sample ID: 280-67225-4
Client Matrix: Solid

% Moisture: 9.8

Date Sampled: 03/30/2015 0902
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	31.5 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1440			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	110
Acenaphthylene		9.5	U	9.5	110
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		15	J X	3.4	16
Benzo[a]pyrene		6.8	U	6.8	16
Benzo[b]fluoranthene		9.2	J	4.4	16
Benzo[g,h,i]perylene		7.6	U	7.6	32
Benzo[k]fluoranthene		4.2	U	4.2	16
Chrysene		10	J	5.1	42
Dibenzo(a,h)anthracene		12	U	12	32
Fluoranthene		17	J	14	42
Fluorene		5.6	U	5.6	32
Indeno[1,2,3-cd]pyrene		13	U	13	32
Naphthalene		13	U	13	110
Phenanthrene		13	U	13	42
Pyrene		14	J	13	42

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	87		72 - 115

4/24/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V503***

Lab Sample ID: 280-67225-5
Client Matrix: Solid

% Moisture: 7.0

Date Sampled: 03/30/2015 0933
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	31.8 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1511			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		*9.1*	*U*	*9.1*	*100*
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.3	U	7.3	30
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	41
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	89		72 - 115

VJ 4/26/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V504***

Lab Sample ID: 280-67225-6
Client Matrix: Solid

% Moisture: 4.8

Date Sampled: 03/30/2015 0927
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	32.3 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1541			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.8	U	9.8	98
Acenaphthylene		*8.8*	*U*	*8.8*	*98*
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.3	U	6.3	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	98
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	91		72 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V505***

Lab Sample ID: 280-67225-7
Client Matrix: Solid % Moisture: 7.2

Date Sampled: 03/30/2015 0858
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	32.1 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1642			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		*9.1*	*U*	*9.1*	*100*
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	89		72 - 115

4/26/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V506**

Lab Sample ID: 280-67225-8
Client Matrix: Solid

% Moisture: 3.9

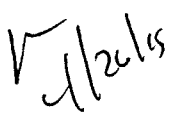
Date Sampled: 03/30/2015 0849
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1713			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		*9.2*	*U*	*9.2*	*100*
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		17	X	3.3	15
Benzo[a]pyrene		13	J	6.6	15
Benzo[b]fluoranthene		18		4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		6.2	J	4.0	15
Chrysene		19	J	5.0	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		16	J	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	J	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	91		72 - 115



Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V507**

Lab Sample ID: 280-67225-9
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 03/30/2015 0909
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	31.4 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1743			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.0	U	9.0	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		*7.2*	*U*	*7.2*	*30*
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	88		72 - 115

4/24/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V508***

Lab Sample ID: 280-67225-10
Client Matrix: Solid

% Moisture: 9.2

Date Sampled: 03/30/2015 0905
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	30.1 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1814			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	110
Acenaphthylene		9.9	U	9.9	110
Anthracene		3.3	U	3.3	22
Benzo[a]anthracene		3.5	U	3.5	16
Benzo[a]pyrene		7.0	U	7.0	16
Benzo[b]fluoranthene		4.6	U	4.6	16
Benzo[g,h,i]perylene		7.9	U	7.9	33
Benzo[k]fluoranthene		4.3	U	4.3	16
Chrysene		5.3	U	5.3	44
Dibenzo(a,h)anthracene		12	U	12	33
Fluoranthene		14	U	14	44
Fluorene		5.8	U	5.8	33
Indeno[1,2,3-cd]pyrene		13	U	13	33
Naphthalene		13	U	13	110
Phenanthrene		13	U	13	44
Pyrene		13	U	13	44

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	88		72 - 115

4/24/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: **J1V509**

Lab Sample ID: 280-67225-11
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 03/30/2015 0915
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1845			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		*9.2*	*U*	*9.2*	*100*
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.3	U	3.3	15
Benzo[a]pyrene		6.6	U	6.6	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	89		72 - 115

4/20/15

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Client Sample ID: ***J1V510***

Lab Sample ID: 280-67225-12
Client Matrix: Solid

% Moisture: 6.3

Date Sampled: 03/30/2015 0922
Date Received: 04/01/2015 0940

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-270855	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	04/03/2015 1915			Injection Volume:	20 uL
Prep Date:	04/02/2015 1623			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.4	U	9.4	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	16
Benzo[a]pyrene		6.7	U	6.7	16
Benzo[b]fluoranthene		4.4	U	4.4	16
Benzo[g,h,i]perylene		7.5	U	7.5	31
Benzo[k]fluoranthene		4.1	U	4.1	16
Chrysene		5.1	U	5.1	42
Dibenzo(a,h)anthracene		12	U	12	31
Fluoranthene		14	U	14	42
Fluorene		5.5	U	5.5	31
Indeno[1,2,3-cd]pyrene		13	U	13	31
Naphthalene		13	U	13	100
Phenanthrene		13	U	13	42
Pyrene		13	U	13	42

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	91		72 - 115

4/22/15

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-67225-1

SDG #: JP0934
SAF#: RC-232

Date SDG Closed: April 1, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V4X9	280-67225-1	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V500	280-67225-2	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V501	280-67225-3	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V502	280-67225-4	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V503	280-67225-5	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V504	280-67225-6	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V505	280-67225-7	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V506	280-67225-8	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V507	280-67225-9	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V508	280-67225-10	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V509	280-67225-11	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310
J1V510	280-67225-12	6010/7471/8082/WTPH-D+/8310	6010B/7471A/8082/NWTPH-Dx/8310

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 4/1/2015 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.1° C, 3.3° C and 4.1° C.

The samples presented in this report contained large rocks that were not included in the aliquots used for extraction and/or analysis.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Sample J1V506 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The sample has been quantified and reported as the predominant Aroclor. Due to the shared peaks of these two Aroclors, there is increased qualitative and quantitative uncertainty associated with these results.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]anthracene in samples J1V4X9, J1V501, J1V502 and J1V506. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-270827 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Chromium are present in the method blank associated with batch 280-270827. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V4X9; therefore, control limits are not applicable.

The duplicate analysis of sample J1V4X9 exhibited RPD data outside the control limits for Barium, Boron and Mercury, and the associated sample results have been flagged "M". There is no indication that the analytical systems were operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-232-091

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location: 100-B-35:1 (shallow zone, ver)		SAF No.: RC-232
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1667-03	COA: 010B352000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131397		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B | Data Turnaround: 7 days

Other Labs Shipped To: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	G/P	aG	aG	aG
No. of Container(s)	1	1	1	1
Volume	250mL	250mL	125mL	250mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310

280-67225 Chain of Custody

Sample No.	Matrix	Sample Date	Sample Time	(1)	PCBs	TPH	PAHs
J1V4X9	SOIL	03/30/15	0950	X	X	X	X
J1V500	SOIL	03/30/15	0956	X	X	X	X
J1V501	SOIL	03/30/15	1000	X	X	X	X
J1V502	SOIL	03/30/15	0902	X	X	X	X
J1V503	SOIL	03/30/15	0933	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	3-30-15 1125	C. Martinez/C Martinez	3/30/15 1125
C Martinez/C Martinez	3/30/15 1550	C. Bingham	3/30/15 1550
C. Bingham	3/30/15 1555	1060 Battelle, fridge #34	3/30/15 1555
1060 Battelle, fridge #34	3/31/15 0700	C. Bingham	3/31/15 0700
C. Bingham WCH	3/31/15 0730	Fed Ex	3/31/15
		[signature]	0940 01Apr15

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

19.3, 1.3, 3.9 IRSto.2
01Apr15 transferred by [initials]

REVIEWED BY K. [signature] DATE 3/31/15

JP0934

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-232-091

Collector STOWE, QG	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH	**Price Code** 8B / **Data Turnaround** 7 days
Project Designation 100-IU-2 & 100-IU-6 Remaining Waste Sites	**Sampling Location** 100-B-35:1 (shallow zone, ver)		**SAF No.** RC-232	
Ice Chest No. RCC-08-022	**Field Logbook No.** EL-1667-03	**COA** 010B352000	**Method of Shipment** Commercial Carrier / Fed Ex	
Shipped To TestAmerica Denver	**Offsite Property No.** A13397		**Bill of Lading/Air Bill No.** See OSPC	

Other Labs Shipped To

N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C								
Type of Container	G/P	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	250mL	250mL	125mL	250mL								
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	PAHs - 8310								
Sample No.	**Matrix**	**Sample Date**	**Sample Time**									
J1V504	SOIL	03/30/15	0927	X	X	X	X					
J1V505	SOIL	03/30/15	0858	X	X	X	X					
J1V506	SOIL	03/30/15	0849	X	X	X	X					
J1V507	SOIL	03/30/15	0909	X	X	X	X					
J1V508	SOIL	03/30/15	0905	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Stowe	3-30-15 1125	S. Martinez	3/30/15 1125
S. Martinez	3/30/15 1550	C. Bingham	3/30/15 1550
C. Bingham	3/30/15 1555	1060 Battelle fridge #139	3/30/15 1555
1060 Battelle fridge #139	3/31/15 0700	C. Bingham	3/31/15 0700
C. Bingham WCH	3/31/15 0730	Fed Ex	3/31/15
			0740 01APR15

FINAL SAMPLE DISPOSITION — Disposal Method: ____ Disposed By: ____ Date/Time: ____

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury)

REVIEWED BY K. Woodward DATE 3/31/15

JP0934

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-232-091

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 8B / Data Turnaround: 7 days
Project Designation: 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location: 100-B-35:1 (shallow zone, ver)		SAF No.: RC-232	
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1667-03	COA: 010B352000	Method of Shipment: Commercial Carrier / Fed Ex	
Shipped To: TestAmerica Denver	Offsite Property No.: A131397		Bill of Lading/Air Bill No.: See OSPC	

Other Labs Shipped To: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS: N/A

Special Handling and/or Storage: Cool 4C

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				Cool 4C	G/P	1	250mL	See item (1) in Special Instructions
JTV509	SOIL	03/30/15	0915	X	aG	1	250mL	PCBs - 8082
JTV510	SOIL	03/30/15	0922	X	aG	1	125mL	TPH-Diesel Range - WTPH-D +
				X	aG	1	250mL	PAHs - 8310

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	3-30-15 1125	C. Martinez / C. Martinez	3/30/15 1125
C. Martinez / C. Martinez	3/30/15 1550	C. Bingram	3/30/15 1550
C. Bingram	3/30/15 1555	1060 Battelle, fridge #3H	3/30/15 1555
1060 Battelle, fridge #3H	3/31/15 0700	C. Bingram	3/31/15 0700
C. Bingram WCH	3/31/15 0730	Fed EX	3/31/15
		01 Apr 15 0940	

FINAL SAMPLE DISPOSITION: Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY K. Woodward DATE 3/31/15

JP0934

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-B-35			DATA PACKAGE: JP0934		
VALIDATOR: ELR		LAB: TAL		DATE: 4/25/11	
			SDG: JP0934		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1U4K1	J1U500	J1U501	J1U502	J1U503	J1U504
J1U505	J1U506	J1U507	J1U508	J1U509	J1U510
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments:_____

_____

_____

_____

_____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments:_____

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GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: n- FD

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments:

No DE

GENERAL ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries aceptable? ..... Yes No N/A
Check materials traceable? ..... Yes No N/A
Check materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Method Blank - Batch: 280-270855

Method: 8310
Preparation: 3550C

Lab Sample ID:	MB 280-270855/1-A	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-270855	Lab File ID:	G0403006.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.3 g
Analysis Date:	04/03/2015 1106	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	04/02/2015 1623			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Acenaphthene	9.6	U	9.6	96
Acenaphthylene	8.6	U	8.6	96
Anthracene	2.9	U	2.9	19
Benzo[a]anthracene	3.1	U	3.1	14
Benzo[a]pyrene	6.1	U	6.1	14
Benzo[b]fluoranthene	4.0	U	4.0	14
Benzo[g,h,i]perylene	*6.9*	*U*	*6.9*	*29*
Benzo[k]fluoranthene	3.8	U	3.8	14
Chrysene	4.6	U	4.6	38
Dibenzo(a,h)anthracene	11	U	11	29
Fluoranthene	12	U	12	38
Fluorene	5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene	12	U	12	29
Naphthalene	12	U	12	96
Phenanthrene	12	U	12	38
Pyrene	12	U	12	38

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	91	72 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Lab Control Sample - Batch: 280-270855

Method: 8310
Preparation: 3550C

Lab Sample ID:	LCS 280-270855/2-A	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-270855	Lab File ID:	G0403007.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.5 g
Analysis Date:	04/03/2015 1137	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	04/02/2015 1623			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1900	1650	87	75 - 116	
Acenaphthylene	1900	1630	86	66 - 115	
Anthracene	1900	1610	85	71 - 115	
Benzo[a]anthracene	1900	1770	93	77 - 120	
Benzo[a]pyrene	1900	1770	93	69 - 115	
Benzo[b]fluoranthene	1900	1730	91	56 - 115	
Benzo[g,h,i]perylene	1900	1960	103	72 - 120	
Benzo[k]fluoranthene	1900	1790	94	76 - 115	
Chrysene	1900	1730	91	79 - 115	
Dibenzo(a,h)anthracene	1900	1700	89	72 - 115	
Fluoranthene	1900	1750	92	77 - 115	
Fluorene	1900	1730	91	77 - 115	
Indeno[1,2,3-cd]pyrene	1900	1740	91	78 - 115	
Naphthalene	1900	1560	82	68 - 120	
Phenanthrene	1900	1650	86	75 - 115	
Pyrene	1900	1850	97	72 - 115	

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	92	72 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-270855

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	*280-67225-2*	*Analysis Batch:*	*280-271012*	*Instrument ID:*	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-270855	Lab File ID:	G0403010.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	04/03/2015 1309			Final Weight/Volume:	4 mL
Prep Date:	04/02/2015 1623			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-67225-2	Analysis Batch:	280-271012	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-270855	Lab File ID:	G0403011.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	04/03/2015 1339			Final Weight/Volume:	4 mL
Prep Date:	04/02/2015 1623			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	84	87	75 - 116	3	20		
Acenaphthylene	83	85	66 - 115	3	20		
Anthracene	83	85	71 - 115	3	20		
Benzo[a]anthracene	91	93	77 - 120	2	20		
Benzo[a]pyrene	92	94	69 - 115	2	20		
Benzo[b]fluoranthene	89	91	56 - 115	2	20		
Benzo[g,h,i]perylene	102	104	72 - 120	2	20		
Benzo[k]fluoranthene	93	94	76 - 115	2	20		
Chrysene	90	91	79 - 115	2	20		
Dibenzo(a,h)anthracene	88	90	72 - 115	2	20		
Fluoranthene	90	92	77 - 115	2	20		
Fluorene	88	90	77 - 115	3	20		
Indeno[1,2,3-cd]pyrene	90	91	78 - 115	2	20		
Naphthalene	80	82	68 - 120	3	20		
Phenanthrene	84	87	75 - 115	4	20		
Pyrene	95	97	72 - 115	2	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Terphenyl-d14 (SUR)	89	92	72 - 115

Client: Washington Closure Hanford

Job Number: 280-67225-1
Sdg Number: JP0934

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-270855

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-67225-2	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	04/03/2015 1309		
Prep Date:	04/02/2015 1623		
Leach Date:	N/A		

MSD Lab Sample ID:	280-67225-2
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	04/03/2015 1339
Prep Date:	04/02/2015 1623
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Acenaphthene	10	U	2050	2050	1730	1780
Acenaphthylene	9.1	U	2050	2050	1690	1740
Anthracene	3.1	U	2050	2050	1690	1750
Benzo[a]anthracene	3.2	U	2050	2050	1870	1910
Benzo[a]pyrene	6.5	U	2050	2050	1890	1930
Benzo[b]fluoranthene	4.2	U	2050	2050	1830	1870
Benzo[g,h,i]perylene	7.2	U	2050	2050	2080	2130
Benzo[k]fluoranthene	4.0	U	2050	2050	1900	1930
Chrysene	4.9	U	2050	2050	1830	1870
Dibenzo(a,h)anthracene	11	U	2050	2050	1810	1840
Fluoranthene	13	U	2050	2050	1850	1890
Fluorene	5.3	U	2050	2050	1790	1850
Indeno[1,2,3-cd]pyrene	12	U	2050	2050	1840	1870
Naphthalene	12	U	2050	2050	1640	1690
Phenanthrene	12	U	2050	2050	1720	1780
Pyrene	12	U	2050	2050	1950	1990